

**REMARKS**

Applicants respectfully request reconsideration of the application, as amended, in view of the following remarks. Claims 16-32 are pending, Claims 27-32 are withdrawn from consideration.

The present invention as set forth in Claim 16 relates to a catalyst composition for the oxychlorination of ethylene supported on a carrier comprising from **3 to 12 %** by weight of copper as a copper salt, from 0 to 3 % by weight of an alkaline as metal as alkaline as metal salt, from 0 to 3 % by weight of an alkaline metal as alkaline metal salt and from **0.001 to 0.1 %** by weight of at least one metal selected from the group consisting of ruthenium, rhodium, palladium, osmium, iridium and platinum, and/or from 0.0001 to 0.1 % by weight of gold, as corresponding metal salt of tetrachloroauric acid.

EP 0 577 059 A1 and Kominami et al fail to disclose or suggest a molar ratio of copper: palladium (or platinum) of at least 30:1.

EP 0 577 059 A1 describes a catalyst and a process for oxychlorination. The catalyst contains compounds of palladium, copper, vanadium and optionally an alkaline metal. The amount of the active metals is from 0.01 to 20 % by weight of palladium, from 0.05 to 40 % by weight of copper and from 0.05 to 40 % by weight of vanadium (see page 3, lines 12 to 16 and page 7, claim 9). These compounds are applied to a carrier material.

The big difference between the present invention and EP 0 577 059 A1 is, that according to the present invention the molar ratio of copper: palladium has to be at least 30:1, whereas according to EP 0 577 059 A1 the catalyst can comprise an excess of palladium. In the examples 1 to 3, page 4 and 5, of EP 0 577 059 A1, the catalyst contains a high amount of palladium. Although there is some surplus of copper present in the catalyst, the molar ratio of copper : palladium remains below 10 (0.083 g palladium chloride, 0.87 g copper (II)-chloridedihydrate, see page 4, lines 42 to 43). The present invention contains a narrow

section of the concentration range of EP 0 577 059 A1 with the requirement that the molar ratio of copper: palladium is at least 30: 1.

Kominami et al relates to a catalyst for oxychlorination supported upon an active carbon carrier consisting of at least one member of a gold compound or platinum compound and at least one member of a copper compound together with a promoter selected from a compound of silver, lead, ruthenium, palladium, osmium, iridium and rhodium, see column 1, line 56 to column 2, line 9. The ratio of the catalyst (gold, platinum) compound to promoter is 1:100 mol (column 2, line 43 to 46). The ratio of gold and platinum to copper and the total amount of active metal in the catalyst is not specified in the description. In example 3 (the example with the maximum concentration of active metal given in the whole document), the concentration of active metal is given with 19.4 % by weight (column 4, lines 68 to 71: 0.0212 mol platinum and 0.242 mol copper per 100 g of active carbon). The highest molar ratio of copper to platinum disclosed in Kominami et al is found in this example, which is 11.4:1, based on the values cited beforehand. This value lies well below the molar ratio of copper to palladium which is described by the present invention.

Furthermore, the catalysts according to the present invention show a narrow ratio of copper: palladium, which is not disclosed in EP 0 577 059 A1. The catalysts described in EP 0 577 059 A1 are suited for the production of vinylchloride, allylchloride and chlorbenzene, the production of 1,2-dichlorethan via oxychlorination of ethylene is not mentioned. Only the production of allylchloride is shown in the examples. The selectivity and the degree of conversion obtained by use of the catalysts according to EP 0 577 059 A1 are clearly lower than those which can be reached by the catalysts according to the present invention. There is no disclosure in EP 0 577 059 A1 that catalysts of the composition described in the present invention would show these advantageous results. Furthermore, the comparative example 2 (page 5 and page 6, table 1) shows that an essential part of EP 0 577 059 A1 is the use of

vanadium pentoxide in the catalyst. In this example a catalyst comprising a support material, a palladium compound and a copper compound was used, only the vanadium compound was omitted. In the initial state of the reaction the catalyst exhibited the desired level of catalytic activity, but showed substantially no catalytic activity 8 hours after the initiation of the reaction. Therefore, it is not suggested by EP 0 577 059 A1 to use the same catalyst without vanadium pentoxide to obtain 1,2-dichlorethan.

In Kominami et al it is emphasized that the carrier material has to be active carbon, see column 2, lines 11 to 34 and Control 1, column 4 and claim 1. If any material other than active carbon is used as carrier, the degree of conversion in the chlorination of ethylene is markedly decreased. The supporting materials disclosed in the present invention are aluminum oxide, silica gel, pumice and clay (page 5, lines 1 to 9). Aluminum oxide is claimed in **Claim 24 of the present invention**. According to the results of Kominami et al, column 4, Control 1, the use of these materials as support is not recommended by Kominami et al. Therefore the catalysts according to the present invention for the catalyst are not obvious even over a combination of EP 0 577 059 A1 and Kominami et al.

Therefore, the rejection of Claims 16-19 and 21-26 under 35 U.S.C. § 102(b) as anticipated by EP 0 577 059 A1 and the rejection of Claims 16-26 under 35 U.S.C. § 102(b) as anticipated by Kominami et al and the rejection of Claims 16-26 under 35 U.S.C. § 103(a) over EP 0 577 059 A1 in view of Kominami et al is believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of this rejection is respectfully requested.

Finally, Applicants note that MPEP §821.04 states, "if applicant elects claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims which depend from or otherwise include all the limitations of the allowable product

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claim will be rejoined." Applicants respectfully submit that should the elected group be found allowable, the non-elected claims 27-32 should be rejoined.

This application presents allowable subject matter, and the Examiner is kindly requested to pass it to issue. Should the Examiner have any questions regarding the claims or otherwise wish to discuss this case, he is kindly invited to contact Applicants' below-signed representative, who would be happy to provide any assistance deemed necessary in speeding this application to allowance.

Respectfully submitted,

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